Memo

Oregon Department of Transportation

To: OPTP Policy Advisory Committee
From OPTP Project Team
Date: December 2016
Re: OPTP: Final DRAFT Opportunities, Challenges, and Trends

Introduction

> ***ODOT Mission***
>
> *To provide a safe, efficient transportation system that supports economic opportunity and livable communities for Oregonians.*

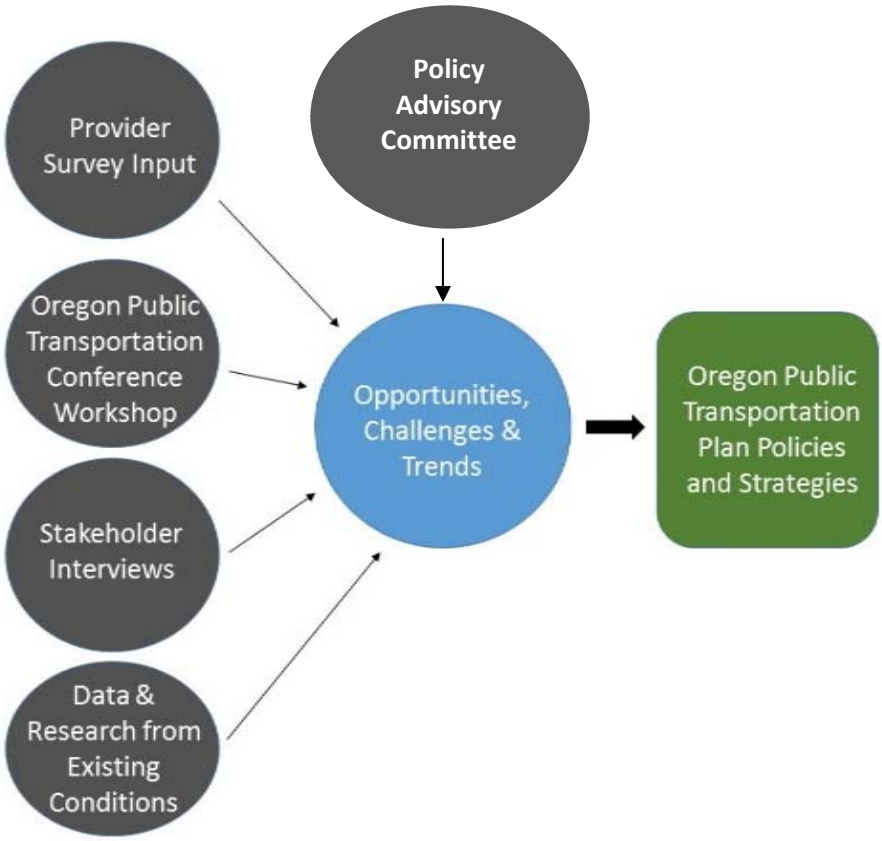
Public transportation is a key component of Oregon's transportation system. Public transportation includes modes such as bus, bus rapid transit, paratransit, light rail, commuter rail, intercity passenger rail, and taxis and similar services. It creates mobility and accessibility for residents and visitors, and provides connections within and between Oregon's urban and rural communities; it supports Oregon's economic vitality; and it contributes to the health and safety of Oregon communities.

This memorandum outlines how societal ***changes and trends*** may affect the way Oregonians think about and use public transportation, and how public transportation contributes to the state's economy and quality of life. The new Oregon Public Transportation Plan will include a vision, goals, policies and strategies that will build on ***opportunities*** and anticipate ***challenges*** that result from trends occurring in Oregon and nationally. The following summarizes trends, opportunities, and challenges that affect public transportation in Oregon. These were identified through OPTP Listening Meetings held in fall 2016, Policy Advisory Committee discussions, OPTP Existing Conditions information, the OPTP Benefits of Public Transportation, and an earlier survey of public transportation providers, conference workshop, and stakeholder interviews.

> *"Trends" refer to developments that reflect changes in demographics, tendencies, habits, or behaviors.*

The information in this memorandum is not exhaustive, and all items listed here may not become policies in the OPTP. Rather, the information and ideas collected here will be used to inform Policy Advisory Committee conversations leading to the development of ***policies and strategies*** for the OPTP. Policies and strategies will address many of the opportunities, challenges and trends faced by transit agencies, other state agencies, and regional and local governments. Policies and strategies shape and support decisions about public transportation planning, investment, construction,

operations, and maintenance. The diagram below shows how these sources have informed the opportunities, challenges, and trends and how these then inform OPTP policies and strategies.



Trends

A number of trends affect transportation in Oregon and the use and provision of public transportation services in the state. These trends are important because they directly influence many of the opportunities and challenges facing public transportation now and in the future, and therefore will help shape the new OPTP.

Population growth and demographic changes

Oregon is growing – about one million new residents have been added to the state's population since the first OPTP was adopted almost 20 years ago. Oregon continues to grow faster than

the national average,[1] driving demand for all forms of transportation including public transportation. Growth is expected to be greatest in urbanized areas, particularly in the Portland Metropolitan area and in the mid-Willamette Valley, and public transportation will become a more important option as motor vehicle congestion worsens. In more rural areas, population changes may vary by location and have different impacts on public transportation in those areas. These different growth trends will affect the quantity and type of public transportation service needed as communities change.

In addition to growing population, three demographic trends are influencing the use and provision of public transportation. First, millennials now make up the largest single generation nationally and in Oregon. Millennials comprise 27% of the state's population.[2] Early trends show that millennials, particularly those who live in urban areas, are less inclined to own personal vehicles and more likely to use public transportation than preceding generations. This will place increased demands on public transportation than has previously been observed.[3]

Second, Oregon's population is aging, and as adults age, they are more likely to use public transportation services as an alternative to driving. Today, 16 percent of Oregonians are aged 65 or older.[4] Older adults are expected to represent a greater share of the population in the future and in turn, a greater share of public transportation trips. Older adults in Oregon are also more likely to live in rural areas (21 percent) compared to urban areas (14 percent),[5] and many intend to stay in their homes as long as they are able.[6] Thus, rural areas in particular, will face increased demands to support the travel needs of older adults to critical services and amenities. This will impact demand and interest in public transportation, and will require providers to accommodate more geographically dispersed riders.

Third, low-wage jobs continue to represent a significant share of jobs in the state and low-income households are more likely to use public transportation than other groups.[7] Low wage jobs are defined as those occupations with a median wage threshold of $12 an hour or annual median earnings of $25,000 or less. Approximately 25 percent of all workers in Oregon meet this criterion. In 2013, 29 percent of all job vacancies in Oregon were for positions paying less than $10 an hour. Furthermore, minority populations represent a disproportionate share of low

[1] State of Oregon Employment Department. 2015. *Population Growth Rate Increases in Oregon for Third Straight Year*. Accessed at https://www.qualityinfo.org/-/population-growth-rate-increases-in-oregon-for-third-straight-year. August 6.
[2] Oregon Office of Economic Analysis. 2015 "Population, Demographics and Generations". Retrieved 2/1/205. Accessed at http://oregoneconomicanalysis.com/2015/02/05/population-demographics-and-generations/.
[3] American Public Transit Association. 2013. *Millennials & Mobility: Understanding the Millennial Mindset.* Accessed at http://www.apta.com/resources/reportsandpublications/Documents/APTA-Millennials-and-Mobility.pdf.
[4] U.S. Census Bureau. 2014. State & County Quick Facts: Oregon, Accessed at http://quickfacts.census.gov/qfd/states/41000.html.
[5] U.S. Census Bureau, Annual Population Estimates.
[6] DeGood, K. 2011. *Aging in Place, Stuck without Options: Fixing the Mobility Crisis Threatening the Baby Boom Generation*. Accessed June 29, 2015.
[7] Lyons, W., Peckett, H., Morse, L., Khurana, M., & Nash, L. (2012, October 12). METROPOLITAN AREA TRANSPORTATION PLANNING FOR HEALTHY COMMUNITIES. Retrieved June 29, 2015, from http://www.planning.dot.gov/documents/Volpe_FHWA_MPOHealth_12122012.pdf.

wage workers; 45 percent of Latino and 50 percent of African American workers are employed in low-wage industries.[8]

These trends combine to result in populations that may live farther from work to find affordable housing and may not have room in their budgets for vehicles and maintenance. For example, a January 2016 report found that a two-person household in Portland would save $818 per month or about $9,817 annually by taking public transportation and living with one less car.[9] Therefore public transportation providers are likely to face increased pressure to provide accessible, convenient and affordable transportation options.

Oregon's demographics affect travel needs and preferences. Understanding these user groups is important in not only planning routes and services but also how to make such audiences aware of their travel options, and to plan for mobility needs (e.g. chair lifts) and amenities (e.g. weather protected stations with seating or lighting) within the public transportation system.

Increasing costs to build and operate public transportation

In Oregon and across the country, maintaining existing transportation infrastructure and responsive transportation service levels is becoming increasingly difficult in the face of long-term transportation funding challenges, particularly for public transportation.[10]

Public transportation funding is different from other roadway and transportation investments in that public transportation includes some infrastructure costs for the vehicles, stops, stations, vehicle storage and any guideways, but more of the expenses are operational, particularly for drivers to provide the service. In a 2015 study ODOT estimated that operational costs are 2:1 the costs of infrastructure investments[11], yet operational funding comes from different sources than capital funding, and is fairly limited. Operational funding is often more from local sources, while capital funding is often mostly from federal sources. State funding contributes some to both types of expense, and state funds for public transportation in Oregon have been fairly consistent.

Local communities often cannot respond to increasing demand for service due to volatility in local funding sources such as payroll and property taxes, and difficulties associated with increasing revenues from existing sources or implementing new ones. In addition to challenges

[8] Oregon Center for Public Policy, 2014. The High Cost of Low Wages in Oregon. Accessed at: http://www.ocpp.org/media/uploads/pdf/2015/2014-lerc-oregon-workforce-report-the-high-cost-of-low-wages-in-oregon.pdf

[9] American Public Transportation Association. Accessed at http://www.apta.com/mediacenter/pressreleases/2016/Pages/160121_Transit-Savings.aspx, March, 2016.

[10] Government Relations, Oregon Department of Transportation. 2013. *Six trends spell trouble for transportation funding*. Accessed at http://www.oregon.gov/odot/govrel/pages/news/110811a.aspx.

[11] ODOT Legislative Report derived from 2015 Portland Metro Budget Data for TriMet and SHRP2 C16 SmartGAP/RPAT accessed at: https://planningtools.transportation.org/files/102.pdf (***Table 3.15***)

with the availability of funds, public transportation operating costs continue to rise. Costs associated with labor have increased steadily over time while funding levels have not, meaning more money is going to operations. In addition, the costs to operate and maintain vehicles have increased and many vehicles are overdue for replacement. These place pressures on the ability to sustain existing services let alone expand services to meet the changing demographic needs across the state.

State and local funds also must be used to "match" federal funds. Transit providers are expected to contribute up to 50 percent of the needed money in order to be eligible for federal funds from the Federal Transit Administration (FTA) and Federal Highway Administration (FHWA). These matching funds may come from taxes, or other local fees, which are often difficult to come by; several public transportation providers in Oregon have indicated that they fear not being able to use all federal funds they are eligible for because they may not have enough matching funds available.

Federal dollars can also be unpredictable due to uncertainties about levels of funding for public transportation in the transportation funding authorizations. Although the newest authorization, Fixing America's Surface Transportation (FAST) Act, increases funding somewhat, new authorizing legislation will be needed after five years. Federal funding for service, especially for seniors and persons with disabilities, has not kept up with demand either.

Connecting to other modes

Most people get to and from the bus or train by walking, biking, or driving and parking. Connections for pedestrians and bicycle riders to public transportation are essential in order to serve the first and last mile needs of those traveling by bus or train. More sidewalks and safe crossings have been built in many places throughout the state, but there are still many locations that need more. Likewise, emerging services like bikeshare and carshare can help make connections to public transportation more accessible. Trends show an increased interest in a shared economy and modes that support seamless travel without the burden of vehicle ownership costs. Bikeshare and carshare services are becoming more prevalent across the state and not just in areas like Portland, but also mid-sized communities like Eugene and smaller towns like Ashland. There is an opportunity to pair these services with public transportation, helping to create a more interconnected and integrated system, which can support greater access to and increased use of public transportation services.

Private transit providers and Transportation Network Companies

Buses, trains and other transit services are not only provided by public agencies but may be available from private providers such as Bolt, Uber, or Lyft. Private provision of transit is not new, as taxis often serve this function and many of Oregon's original street car lines were owned and operated by private businesses. An investigation of trends shows that there has

been a recent resurgence of private providers, who have recognized economic opportunities to help meet traveler demands. Bolt offers low-cost intercity and interstate connections across several parts of the country, while services like Uber and Lyft are similar to low-capacity demand response transit, where contracted drivers can use their own vehicles to pick up and drop off riders. There are opportunities to consider how public and private sector providers may complement one another to meet the overall needs of riders, how one may be able to better serve specific needs, and how they can function together to expand Oregonians' travel choices and opportunities overall. So far, most of this innovation has been in larger urban areas, but there may be opportunities in smaller communities and rural areas to be explored as well.

New technologies

The emergence of mobile applications that provide trip planning, real time travel information, and alerts have also made it easier and more convenient for transit users with smartphones. New e-fare technologies allow riders to purchase fares on their smartphone, speeding boarding times and increasing convenience for riders. Automated and connected cars, buses, and trains are also being tested and operated and may be a future way of delivering transit in a safe, user-friendly and cost efficient way. These technology trends present major opportunities for making public transportation more efficient and easy to use and thereby increasing ridership and revenue, though new technologies may also add expense for implementing and maintaining the technology.

Using public transportation to support state goals

Public transportation is a tool to help accomplish many of Oregon's goals including supporting a robust state economy, increasing freight mobility, reducing transportation-related greenhouse gas emissions, promoting energy conservation, supporting emergency preparedness, complementing land uses, and improving public health. State- and local-level greenhouse gas emissions reduction planning efforts revealed that expanding public transportation is essential to reducing emissions from the transportation sector. Additionally, public transportation almost always requires that users walk or bike to and from their station or stop, which can help increase physical activity for users and in turn improve public health. It supports the state's economy and freight movement by providing transportation options and helping to manage congestion through the carrying capacity of a single bus or train car. Public transportation can reduce transportation costs for riders and as a result reduce overall household costs, and provide access to education and employment opportunities, as well as shopping and other services.

Opportunities and Challenges

Opportunities and challenges provide a foundation for shaping goals, policies and strategies that can anticipate change and frame and support future decisions about public transportation in the state. The following table lists the draft goals of the OPTP with associated opportunities and challenges for public transportation identified in OPTP work so far. In the right column, example policy or strategy topics following from the Opportunities and Challenges are listed for further consideration in the OPTP development process. Neither the Opportunities and Challenges column nor the Example Policy Topics is meant to be an exhaustive list, rather these represent a collection of ideas heard or identified to date. In addition, all ideas listed here may not become policies and strategies in the OPTP; these ideas will be used to begin discussions about policies and strategies with the OPTP Policy Advisory Committee.

Although many of these opportunities and challenges are related to the key trends described above (many relate to more than one trend), some may be related to other Oregon historical or societal contexts.

GOAL #1: MOBILITY: PUBLIC TRANSPORTATION USER EXPERIENCE People of all ages, abilities, and income levels move reliably and conveniently between destinations using an affordable, well-coordinated public transportation system. People in Oregon routinely use public transportation to meet their travel needs.	
Opportunities & Challenges	**Example Policy Topics**
Mobility management (Mobility management is a strategic, demand-oriented approach to the integration of transportation services that emphasizes movement of people instead of vehicles.)	• Collaboration between transportation providers to better plan/utilize existing services • Mobility education and travel training for customers, planners and other community members • Incorporate mobility management measures in long range plans and programs • Public information/marketing • One-stop information and referral and fare integration systems • Mobility support programs for human service agency clients
Multimodal features and options	• Best practices for bikes and users of mobility devices on transit • Best practices for facility design (e.g. bike parking at transit stops) • Collaboration with private providers • Multimodal hubs

	• Roadway design features to support transit (e.g. completion of bike lanes and sidewalks to access transit)
Access to information	• Provision of accessible transit information and marketing • Culturally appropriate marketing and information • Use of technologies • Develop model of "readable" transit schedules and marketing techniques
Increased congestion travel time reliability	• Bus queue jumps • Transit signal priority • Transit pass programs • Pre-tax benefits • Bus on shoulder • Dedicated bus lanes • Increase regional high capacity transit options
GOAL #2: ACCESSIBILITY AND CONNECTIVITY: GETTING FROM HERE TO THERE A readily available and user-friendly public transportation system provides people with convenient connections to and between routes and travel modes, public and private providers, and people and places in urban, suburban, rural, regional, and interstate areas.	
Opportunities & Challenges	**Example Policy Topics**
Last Mile and Multimodal connections	• Link to other modes and amenities • Technology and information for travelers • Partnerships with private companies • Establish roles for development of intermodal facilities (hubs) • ODOT, local government, private partners identify key locations for park and rides in rural areas • Partner with local governments to prioritize sidewalk improvements and bike lanes on routes leading to bus stops
Access to jobs, schools, services	• Role of public transportation in providing access • Identification of different transit roles • Housing and job connections • Communicating transit design choices • Coordinating transit service hours of operation with business hours of essential destinations • Student passes and discounted fare programs for low income households, veterans

Seamless connections between modes	• Intermodal connections, including passenger rail • Bicycle and pedestrian interface with transit system • Operator interface with transit system • Interline transit schedules • Technologies that enable transfers between modes • E-fare/universal fare • Manage relationships between intercity bus/rail and regional commuter services between communities
Connections between communities, cities, regions, and states	• Connections between communities • Identification of needed connections • Connections to support intercity, interregional and interstate movements • Regional planning
Traveler information	• Emerging technologies for trip planning, real-time information, and e-fare technology • Provision of travel information to non-traditional audiences • Role of state in traveler information • Use of GPS and other technologies to identify where public transportation vehicles are in time and space • Travel planning software to identify the range of potential options for individual trips • One-stop information and referral resource
Long distance trips in rural areas, often low ridership and high cost, lack of frequency; weather often an issue (too hot or too cold)	• Work with regional employers to encourage vanpool options • Provide support and technical assistance for agencies traveling out of state to regional destinations, such as medical centers • Develop passenger facilities near major destinations that enable people to safely and comfortably wait
GOAL #3: COMMUNITY LIVABILITY AND ECONOMIC VITALITY Public transportation promotes community livability and economic vitality by efficiently and effectively moving people of all ages to and from homes, jobs, businesses, schools and colleges, and other destinations in urban, suburban, and rural areas.	
Opportunities & Challenges	**Example Policy Topics**
Attracting employers and highly skilled workers	• Service coordination for locations identified for economic development efforts • Service coordination for existing employer locations

	• Incentives to locate near transit • Transit passes for employees • Pre-tax programs
Enabling workers to access jobs	• Public transportation services alignment with diverse work schedules • Work with public and private sector providers to provide off-hour transportation • Integrate TO strategies with transit (e.g. van pools)
Enabling students to get to school	• Use transit to help address truancy and high absenteeism rates through student transit passes • Service coordination for colleges, universities, vocational training sites
Promoting and supporting tourism	• Tourist passes • Travel training and information for tourists • Transfers between transit service providers • Public transportation access to recreational activities • Bikes on buses and trains – bike trailers
Special events (athletic games, conferences, concerts, rallies, weekly markets)	• Service adjustment and partnering with event sponsors to meet travel needs for large events • Public-private partnerships
Maintain capacity of local transit agencies to meet the service and compliance obligations of operating transit services	• Co-locate core transit functions typically managed independently by transit agencies such as transit maintenance and dispatch • Identify mechanism to share qualified staff such as vehicle inspectors and trainers • Develop statewide driver recruitment and training program
GOAL #4: EQUITY Public transportation is a tool for enhancing equity and opportunities for all Oregonians. Affordable, safe, and welcoming public transportation options improve lives by providing efficient access to goods and services, jobs, and other key destinations.	
Opportunities & Challenges	**Example Policy Topics**
Identify needs for the use of public transportation across Oregon's diverse population	• Equity assessments in transportation planning and decision-making • Methods to ensure outreach and participation of public transportation users in capital and operations planning

Balancing different aspects of equity	• Balance "horizontal" equity (i.e., does service and resource distribution roughly reflect the distribution of population around the state, local and regional areas) with "vertical" equity (i.e., does distribution of service and resources compensate for inequities in income, mobility, and need) • Guidance related to setting fares • Tools to develop fare subsidy programs for certain users • Technical assistance and funding for rural transit agencies for planning and outreach • Productivity vs. coverage for route planning
Youth access to public transportation	• Partnerships with schools and colleges e.g. transit passes • Locating bus stops near schools • Best practices in public transportation for youth
Transit-dependent needs	• Minority and low-income households service needs • Address limited English proficiency (LEP) needs • Model programs for culturally appropriate outreach and public involvement
GOAL #5: HEALTH Public transportation fosters improved health of Oregonians by promoting clean air; enhancing connections between people; ensuring access to services such as health care and goods such as groceries; and by giving people opportunities to integrate physical activity into everyday life through walking and bicycling to and from public transportation.	
Opportunities & Challenges	**Example Policy Topics**
Access to essential services	• Public transportation connections to health services • Barriers to use of public transit for youth, aging adults, people with disabilities, and transportation disadvantaged
Support of active lifestyles	• Support use of active modes for first/last mile connections • Public transportation's contribution to cleaner air • Links between neighborhoods accessibility and access to transit • Connections between neighborhoods and to recreation

GOAL #6: SAFETY AND SECURTIY Public transportation trips are safe; riders feel safe and secure and experience low risk of injury during their travel. Public transportation contributes to the ability of Oregon communities to cope with natural or human-caused disasters and other emergencies.	
Opportunities and Challenges	**Example Policy Topics**
Transit vehicle crashes	• Driver training • Education for all users • Data and identification of risk factors
Transit security issues or perceptions	• See and be seen at transit stops (e.g. illumination) • Security guard/enforcement presence • Outreach to address misconceptions • Security planning • Safety audits and toolkits • Driver and first responder training to manage illegal activity • Bus and facility security systems • Assure facility/vehicle maintenance and cleanliness
Natural disaster resilience and redundancy	• Emergency planning by transit agencies to secure transit operations and data • Understand and work to mitigate seismic vulnerabilities • Transit as a modal option in preparation or recovery after some disasters • Communication and incident management systems • Coordination with law enforcement and emergency responders • Technical assistance for managing evacuation of populations without cars
Roadway, guideway, or track design	• Bus stops and pullouts • Road, guideway, or track geometry • Guideway or track crossings • Operating speeds • Guidelines for safety mitigations in location of transit stops • Guidelines/techniques for locating transit facilities on high-speed roadways
Education for transportation system users	• Safety/prevention best practices • See and be seen campaigns • Rider orientation

Enforcement	• Disparities in fare enforcement • Techniques for enforcing regulations related to illegal activities, e.g. drug use, loitering, etc.
Transit as a community safety management option	• Late night bus service in college towns and other locations/times to discourage impaired driving • Consider transit service to destinations on routes with high crash potential such as ski areas/mountain roads • Transit available for youth activities, such as football games

GOAL #7: ENVIRONMENTAL SUSTAINABILITY

Public transportation contributes to a healthy environment and climate by moving more people with efficient, low emission vehicles, reducing greenhouse gases and other pollutants.

Opportunities & Challenges	Example Policy Topics
Greenhouse gas emissions	• Fuel efficient and electric vehicles • Reduced reliance on SOVs • Use of different fuels by transit (CNG, natural gas etc) • Opportunities for congestion mitigation
Water quality	• Water quality
Soil quality	• Soil quality
Noise levels	• Quieter public transportation vehicles
Operational efficiency	• Roles for technology in improving public transportation

GOAL #8: LAND USE

Public transportation is a tool that supports Oregon's state and local land use goals and policies. Agencies collaborate to ensure public transportation helps shape great Oregon communities providing efficient and effective travel options in urban, suburban, and rural areas.

Opportunities & Challenges	Example Policy Topics
Last mile and multimodal connections	• Land use and transportation planning to support modal choice and connection to other modes • Park and ride planning • Multimodal hub planning • Support community planning for car and rideshare • When to encourage paid parking
Integration of transportation and land uses	• Land use and transportation planning to identify priority corridors

	• Where to encourage land use development patterns that support transit service (e.g. designated corridors and centers, incentives for developers, transit supportive options) • Transportation system plans include transportation and land use strategies to support public transportation • Co-locate key transit destinations with transit facilities
Land use and affordable housing	• When to encourage development that places affordable housing near transit services • Transit services to connect affordable housing with entry level/low-wage jobs • Consider combined cost of housing and transportation

GOAL #9: STRATEGIC INVESTMENT

Sustainable and reliable funding meets the demand for public transportation service operations and infrastructure. Strategic investments in public transportation support the overall transportation system and Oregonians' quality of life and economy.

Opportunities & Challenges	Example Policy Topics
Lack of consistent, sustainable funding	• Exploration/support of additional funding and financing options • Sustainable and consistent source funding
Emerging technologies	• Oregon as a "proving ground" for new transit technologies • Monitoring development and advancement of new technologies as they relate to public transportation
Prioritizing system investment	• Prioritization frameworks • Role of emerging technologies to create a more efficient system • TAM – transit asset management • Performance planning and measures
Equitable investment	• Equitable distribution of state/federal/local resources, including whether and how to ensure a basic level of service in all communities • Equity assessments in transportation decision-making • Consider basic level of service appropriate to area • Consider rural factors (distance, cost, age) when allocating grant funds

Lack of flexibility in the use of public transportation resources	• Exploration/support of additional funding and financing options • Support flexible funding source that may be used for both operations and capital
Fixed route transit	• Best practice in designing fixed routes • Use of technology for planning
Demand for paratransit services	• Collaboration with human resource service agencies • Partnerships with non-profits or private contractors • Provide alternative services such as shopper shuttles
Demand-response services	• Partner with non-profits or private contractors • Partner with human service providers to consolidate/coordinate operations • Technical support to providers to develop deviated fixed-route or other flexible services options in lieu of demand response • Identification of best practices for provision of demand-response service • Technology to increase efficiency • Develop volunteer driver programs to support low-volume service for certain vulnerable individuals, such as seniors, people with disabilities and children
GOAL #10: COMMUNICATION, COLLABORATION, AND COORDINATION Public and private transportation providers and all levels of government within the state and across state boundaries work collaboratively and foster partnerships that make public transportation seamless regardless of jurisdiction.	
Opportunities & Challenges	**Example Policy Topics**
Coordination between transit agencies and human service agencies	• Partner with human service agencies to provide rides and share costs • Encourage one-call centers that can facilitate group trips or fill empty seats in buses • Identification of potential mobility management services
Partnerships between businesses and institutions	• Partnerships with businesses to offer transit passes • Partnerships with schools and colleges to offer student passes and other transit support
Coordination and cooperation	• Coordination among public transportation providers, local government, private partners, and transportation planning efforts

	• Roles and responsibilities of different government agencies and transit providers • Improve transit service planning – initiate transit development plans • Interstate coordination
Data and information	• Share and leverage data between and across public transportation providers and jurisdictions • Identify best practices for collections, storing, and managing data